

## About Historic and “Retired” Firearms



The care of firearms, particularly in a home environment, is an ongoing process that requires attention to detail to ensure long-term stability. The process can be broken down into several steps. These steps include thorough examination, careful cleaning, appropriate housing, and stable, secure storage. The care information in this document was written for firearms that are **not** in use.

## Handling

Before you begin, you must make sure the firearm is not loaded. For complete instructions on how to do this, visit:

<https://www.nps.gov/museum/publications/conservogram/10-01.pdf>

Even after you determine your “retired” firearm is not loaded, it is best not to pull the trigger. There may be extensive corrosion to interior parts and pulling the trigger may result in

damage to the internal mechanism.

Before handling, it is a good idea to wear gloves to avoid transferring oils, acids, and salts from your hands to the object. Cotton or chlorine-free nitrile gloves are both appropriate choices. Remove all jewelry that can scratch the object while you are handling it. Make sure that you have a clean, dry place to examine the object before you move it. Always support the object with two hands while handling it.

## Examination

Examination of an artifact usually begins with a description, noting all of the materials, both organic and inorganic, used to create it. Take note of

makers’ marks, serial numbers, tool marks, and any evidence of change that may have been made to the weapon over time. Carefully look over

Inside this issue:

Handling	1
Examination	1
Cleaning	3
Waxing	4
Storage	5
Long-Term Care	5
Consulting a Conservator	6

## Examination Cont.

your firearm to make sure it is strong enough to withstand the amount of handling needed for these activities. Examine the structure and surface carefully, looking for cracks, weak areas, old repairs, and loose or missing parts. Make notes of your findings and take documentary photographs.



Determine if there are original decorative or protective surface finishes on the surface.

On firearms, these coatings tend to be clear varnish or wax coatings

on the stocks and plating, patination, oils, or waxes on the barrels. Plating is a coating of one metal over another metal; nickel, tin, or chrome plating may be found on some barrels. Less common plating layers include silver and gold.

Another important type of decorative and protective surface sometimes applied to metal parts is a patina. A patina is a thin, chemically induced layer of relatively stable corrosion on the surface of an object. There is a long history of patination on the surface of weapons. Patinas are typically dark

blue, or dark brown. Barrels can also be patinated with heat, which creates a multi-colored effect. Some people also refer to the minor corrosion that forms on a weapon from use and handling over time as the “patina of age”. However, in the context of this document, the term patina is used to refer only to *intentionally* applied surface finishes. Original surface coatings, either on the stock or the barrel should not be removed and could easily be ruined by aggressive cleaning procedures. For example, brown patination on a barrel can be mistaken for rust. Varnishes and waxes on stocks can be transparent and very thin, and thus, very difficult to detect with the naked eye or with a hand lens.

Make note of any corrosion you find on the surface of the weapon. Iron corrosion products are highly expansive, disfiguring, and difficult to reduce. The cleaning procedures listed below are not appropriate for heavily corroded objects, as they are ineffective on these surfaces.

It can sometimes be difficult to determine the structural or surface condition of an object. If your piece seems fragile, appears heavily corroded, or has decorative plating, inlay, or patination, please consult a conservator in order to assess the issues relating to its care.



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## Cleaning

If you determine that your firearm is strong enough, has no evidence of coatings or plating or patination, and has only minor corrosion, proceed cautiously. Commercial cleaning products are to be avoided, as many contain corrosive chemicals such as ammonia, harsh abrasives, acids, or bases, which can permanently damage artifacts. The materials and techniques listed below have been tested and found to

be safe and effective when used in a careful and sensitive manner.

Provide a clean well-ventilated work area for the cleaning process. Place a clean piece of soft muslin or other soft cotton on the table as a work surface. Wear powder-free nitrile gloves to avoid contaminating both your object and yourself. Oils, salts, and acids from your skin can easily cause corrosion to metal surfaces.

### Procedure

Remove any loose dirt or dust by brushing lightly with a soft brush or camel hair paintbrush. If brushes have metal ferrules, cover them with tape to prevent them from scratching the object. Do not use dusting cloths, as they will not get into small crevices, and can cause scratching if trapped grit is rubbed over surfaces. If the artifact has soil that is firmly attached, a stiff paintbrush or stippling brush may be needed. Vacuum away any residues, brushing the dust towards the vacuum nozzle. If possible, separate the stock from the barrel assembly. If this is not possible, mask out any non-metallic elements, with thin polyethylene wrap to protect these parts from the barrel cleaning materials.

Remove any waxy or oily accretions from the barrel by lightly brushing the area with a natural bristle brush or cotton swabs dampened with mineral spir-

its. Rinse the brush in a small container of mineral spirits or replace the cotton swabs as they become soiled. Clean the brush or replace the swabs regularly to avoid scratching the surface with loosened rust and accumulated grime.

To remove minor rust deposits, wet

The following materials will be needed:

- A clean towel and clean white sheet to create a padded work surface
- Heavy polyethylene plastic sheeting to protect the padded work surface
- Cotton swabs or pads
- Gloves: powder-free nitrile are recommended
- Mineral spirits
- Ultra fine (4/0) steel wool
- A penetrating lubricant that displaces moisture, such as WD 40® or CRC 3-36®
- Distilled water
- Soft clean natural bristle brushes, such as haké, watch, or paint brushes
- Stiff natural bristle brushes and bamboo skewers,
- Apron or smock to protect clothing
- Clear microcrystalline paste wax, such as Renaissance® wax, or a clear hard paste wax available in hardware stores such as Behlens® paste wax.
- Clean natural bristle stippling or stencil brushes, or shoe buffing brushes, for waxing and buffing



## Procedure Cont.



small wads of 4/0 ultra fine steel wool with the penetrating lubricant and rub gently. Do not use bronze, tin, or nickel wool in an attempt to reduce potential abrasion. These materials will actually

leave a thin layer of copper alloy, tin, or nickel on the surface that will increase the rate of corrosion through a process called galvanic interaction. Never immerse an iron object in a bath of water, as it will begin rusting almost immediately. Old wax can be pushed off with the blunt end of a bamboo skewer or removed with mineral spirits.

Clear any residues with clean mineral spirits on swabs or brushes or clean pieces of soft cotton rags. A clean soft brush may be used to remove any remaining residues from crevices or recessed design elements. Allow the min-

eral spirits to completely evaporate. Finally, remove the protective wrap applied to non-metallic components.

Clean the wood and other organic parts using cotton swabs or cotton pads barely dampened with distilled or deionized water; wipe immediately with clean dry pieces of cotton to dry the surface. Before undertaking this type of cleaning, it is important to test clean in a small, inconspicuous area to be sure that the water will not cause the surface finish to blanch or discolor.



**WARNING:** When working with solvents, be sure to follow all recommended safety precautions noted on the containers. Wear nitrile gloves, which will protect your hands from mineral spirits as well as the solvents in the wax solution. Mineral spirits are strong, reactive solvents and their fumes can be harmful to your health when not used as instructed. **Always be aware of the location of the nearest fire extinguisher when working with flammable solvents and waxes.**

## Waxing

Your piece is now ready for the application of a protective wax coating. The wax used for this purpose is a clear microcrystalline paste wax. Nitrile gloves should be worn to avoid contaminating both your object and yourself. The wax coating can be applied to all of the parts. Only objects that have been properly cleaned and dried

should be waxed.

Apply a small amount of paste wax to a clean stencil brush and wipe thinly over the piece, being careful to get complete coverage. Do not apply too much- a **little** wax goes a long way.

Wait a minute or two and buff the wax out with a clean stencil or shoe buffing



brush. Wax has a plate-like structure, and buffing helps to align and compress it into a more continuous and protective coating. If you accidentally leave the unbuffed wax too long, simply apply a little more wax to soften the previous coat, then buff immediately.

To maintain the firearm, dust it periodically with a soft haké brush, checking each time for evidence of corrosion. Handle non-working weapons with gloves to prevent the development of fingerprint corrosion.



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## Storage



Store small arms in acid-free boxes cushioned with acid-free tissue or soft polyethylene foam. Long arms may be stored in the same manner. If space issues require long arms to be stored vertically, minimize pressure on the wooden stocks by storing them with the barrels **down** on a surface padded with polyethylene foam.

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## Long-Term Care

Firearm storage areas should provide stable relative humidity and temperature. Because low relative humidity will harm the wooden stock and high humidity conditions will harm the iron alloy barrel and other metal parts, try to maintain stable relative humidity in the range of 35-50%. Maintaining cool temperatures, below 72°, will help slow the process of deterioration. If the storage area also doubles as an exhibit space, control both the visible and ultraviolet light, keeping visible light levels below 50 lux and ultraviolet light below 75 micro-watts per lumen. Avoid the use of wool

or silk in storage areas. These materials contain sulfur, which will accelerate corrosion, particularly to copper and silver alloy components. If soft covers are desired, create simple bags by sewing clean white cotton flannel with cotton thread. Avoid plastic covers, as their deterioration products may cause damage to the weapons. Keep the area locked at all times for safety and security.



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## Consulting a Conservator

If you have any concerns about the care of firearms, consult a conservator in your area for further guidance. This is especially important if your piece seems fragile, appears heavily corroded, or has decorative plating, inlay, or patination. A conservator will be able to assess the issues relating to its care including testing and identification of coatings and other materials. Conservators can provide basic structural repairs, corrosion reduction, protective coatings, and proper storage materials.

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## Additional Resources

Canadian Conservation Institute. *Care of Metals*. Retrieved from <http://canada.pch.gc.ca/eng/1453994182990>

American Institute for Conservation of Historic & Artistic Works. *Caring for Your Treasures: Metal Objects*. Retrieved from [www.conservation-us.org/docs/default-source/resource-center/paintings.pdf](http://www.conservation-us.org/docs/default-source/resource-center/paintings.pdf).

National Parks Service. (May 1999). *Conserv-O-Gram*, Care of Historic Long Arms. Retrieved from <https://www.nps.gov/museum/publications/conserveogram/10-01.pdf>

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## Conservation Suppliers

### Conservation Resources International

5532 Port Royal Road  
Springfield, VA 22151  
Toll free: (800) 634-6932  
[www.conservationresources.com](http://www.conservationresources.com)  
*Archival housing/storage supplies, photographic supplies, general*

### Gaylord Archival

P. O. Box 4901  
Syracuse, NY 13221-4901  
Toll Free: (800) 448-6160  
[www.gaylord.com](http://www.gaylord.com)  
*General conservation supplies, housing supplies*

### Hollinger Metal Edge, Inc.

6340 Bandini Blvd  
Commerce, CA 90040  
Toll Free: (800)-862-2228  
[www.hollingermetaledge.com](http://www.hollingermetaledge.com)  
*Archival housing/storage supplies*

### Light Impressions

100 Carlson Road  
Rochester, NY 14610  
Toll Free: (800) 975-6429  
[www.lightimpressionsdirect.com](http://www.lightimpressionsdirect.com)  
*Photographic supplies, housing, matting and framing supplies*

### University Products

517 Main Street  
P. O. Box 101  
Holyoke, MA 01041  
Toll Free: (800) 628-1912  
[www.universityproducts.com](http://www.universityproducts.com)  
*General conservation supplies, housing and matting supplies*

### Talas

330 Morgan Ave  
Brooklyn, NY 11211  
Telephone: (212) 219-0770  
[www.talasonline.com](http://www.talasonline.com)  
*Conservation supplies, photographic supplies, general*



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